DOCUMENT RESUME

ED 251 191 PS 014 725

AUTHOR Ashby-Davis, Claire
TITLE Suggestions for Staff Development in Teaching Critical Thinking.
PUB DATE Apr 84
NOTE 14p.; Paper presented at the Conference on "Critical Thinking across the Curriculum (K-12)...(New York, NY, April 7, 1984).
PUB TYPE Guides - Non-Classroom Use (055) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cognitive Processes; Concept Formation; *Critical Thinking; Elementary School Teachers; *Elementary Secondary Education; Faculty Development; *Inservice Teacher Education; Metacognition; Secondary School Teachers; *Staff Development; Supervisory Training; Teacher Workshops
IDENTIFIERS *Bloom (Benjamin S)

ABSTRACT

This paper outlines a development course on teaching critical thinking skills designed for both elementary and secondary teachers and supervisors. Improving a student's ability to use higher order intellectual skills has been recognized by national and state commissions as important in improving student achievement. To successfully improve the teaching of critical thinking skills, staff development plans must first review the thinking processes/strategies needed to accomplish the specific cognitive tasks of the subject disciplines. Bloom and his colleagues' (1956) theory of critical thinking, synonymous with the term "evaluation," is one conceptualization of higher order skills and is illustrated by an example of classroom instruction drawn from secondary English teaching. The second step in staff development is finding strategies for teaching critical thinking skills to students. Examples of teaching methods requiring that students develop and use critical thinking are presented. It is suggested that this staff development take place under the leadership of supervisory personnel or fellow teachers in a cooperative workshop.(CB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED251191

PS 014725

Suggestions for Staff Development in Teaching Critical Thinking

Claire Ashby-Davis, Ph.D.

The Need for Staff Development in Teaching Critical Thinking. In recent years there has been a movement in American education to get "back to basics." The cause of the movement is praiseworthy since its proponents hope to remedy a general national decline in student achievement. In many quarters, however, the movement has been limited to the improvement of reading, writing, and arithmetic skills. These skills, while worthy of improvement and highly related to academic success, do not completely meet the basic needs of students for enhanced achievement in school. The missing ingredient is the "basic" basic which can be described as the ability to know how to know, sometimes described as the power to learn how to learn, no matter what the content area studied. In the final analysis, the task of each educator is to enable students to think in the modes necessary to learn subject matter, and, perhaps more importantly, to know that they know these modes. (The latter thinking process shall be referred to in this discussion as metacognition.)

The need to improve student ability to think across the curriculum has been highlighted in the survey of American education made by the National Commission on Excellence in Education. In the 1983 report, the authors noted that many seventeen year-olds do not have higher order intellectual skills that should be expected of them. Among the solutions presented by the commission members which are pertinent to this discussion are:

1. Schools should ask staffs to spend more time on helping students to develop study skills.

2. English teachers should stress the topics in their subject which will

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Claire Ashby-Davis
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

assist students to comprehend, interpret, and evaluate what they read; use thinking skills to write well organized and effective papers; and discuss ideas with intelligence.

3. Mathematics teachers should stress the understanding of the concepts of their subject and specifically should help students to judge the accuracy of their calculations.

5. Science teachers are asked to focus on helping students to develop modes of scientific inquiry and reasoning.

6. Teaching of the fine and performing arts is expected at the elementary and secondary school levels, with a view to improving the individual's gifts for thinking, feeling, and making aesthetic judgments.

State plans developed to meet the suggestions and implications of the national report have also focused on the need for teaching thinking across the curriculum. As an example, New York State through its State Education Department has prepared a Proposed Action Plan To Improve Elementary and Secondary Education Results in New York(August 1983). This action plan reflects increased emphasis on "thinking logically" and "problem solving skills." Specific samples from the text include: thinking logically and creatively; applying reasoning skills to issues and problems; comprehension of written, spoken and visual presentations in various media; developing modes of inquiry to be successful in the study of the English language and literature, history and the social sciences, mathematics, natural sciences, and the language and literature of one other language than English; developing aesthetic judgment and the ability to relate aesthetic judgment to works of art; and developing a commitment to lifetime learning with the capacity for undertaking new studies, synthesizing new knowledge and experiences with the known, and refining the ability to judge.

Suggested Steps in Staff Development. In the light of the national and state reports and plans, it is likely that there will be several efforts on the part of local educational personnel to initiate appropriate staff development for supervisors and teachers at both elementary and secondary levels of education. This staff development will probably be most successful if it follows two important steps: 1. the review of the thinking processes/strategies needed to accomplish the specific cognitive tasks of the subject disciplines; and 2. the sharing of appropriate modes for teaching students to know these cognitive processes and to evaluate their successful or unsuccessful use of these processes.

In general, to accomplish the first step, educators will be helped by reviewing the analyses of learning/thinking processes, strategies, conditions and hierarchies presented by such scholars as Bloom, Feuerstein, Gagné, Guilford, Piaget, Vygotsky, among others. At the second step of relating their theories and/or research studies to actual classroom practice, educational personnel will need to collaborate much in the style of the teacher center mode of operation or the Bay Area Writing Project, both of which are collaborative modes of arriving at methods of instruction geared to the needs of students at various levels of age, social background, and academic expertise.

The specific purpose of this discussion is to provide the leaders and participants of such staff development with a brief review of one form of cognitive processing called critical thinking as it might be studied in step one of a staff development project, and then to propose several resources for further research and study at step two.

[illegible] to [illegible].

Step One: The Nature of Critical Thinking

For Bloom and his associates(1956), the term critical thinking is synonymous with the term Evaluation. They define the latter as the ability to judge according to known internal or external criteria. The ability to judge has two subcategories: 1. "Making judgments about the value of materials and methods for given purposes"; and 2. "Judging the extent to which materials and methods satisfy given criteria." Bloom's illustrative examples of internal and external criteria are as follows: Internal Criteria/Evidence--"The ability to indicate logical fallacies in arguments"; External Criteria/Evidence--"The ability to compare a work with highest known standards in its field." (See Taxonomy of Educational Goals. Handbook 1: Cognitive Domain).

Evaluation or critical thinking appears as the sixth highest educational cognitive goal in Bloom's taxonomy. For this reason, it is thought of as a high order intellectual skill which may well be dependent on a learner's ability to apply lower cognitive skills to a communication before critical thinking can take place. These skills in order of difficulty in the taxonomy are: knowledge; comprehension, application, analysis, synthesis, and critical thinking(evaluation).

The brief summary of Bloom's theory presented above can be illustrated by an example of classroom instruction drawn from secondary English teaching.A teacher asked as the first question in a discussion class,"Is the short story, 'Laughing Girl' true to life?" In order to answer this question with any success, students would, according to Bloom, have control over several thinking processes of a lower order and they would have applied the skills to the story, "Laughing Girl."

The following is a possible although not exhaustive listing of these students' cognitive skills under generic and specific headings.

Generic Cognitive Processes	Specific Cognitive Processes Applied to the Short Story in Question
1. Knowledge	1.1 Students know the difference between fiction and non-fiction. 1.2 Students know that short stories are examples of fiction. 1.3 Students know that the "truth" of fiction may range from the highly fantastic to the naturalistic. 1.4 Students know the meaning of the phrase "true to life." 1.5 Students have a fairly good knowledge of life either through life experiences or through reading or both.
2. Comprehension	Students can translate the key words, phrases, sentences, paragraphs, dialogue, metaphors, symbols, etc. of the story into their own words, Meanings.
3. Application	3.1 Students can apply what they know about the nature of fiction and short stories to this short story. 3.2 Students can apply what they know about life to written communication.
4. Analysis	4.1 Students can break down the short story studied into its component parts. 4.2 Students can arrive at the following parts of importance in this short story: character development; conflict; climax; conclusion; sentence style.
5. Synthesis	Students can think of the story as a whole, combining the parts to arrive at its main theme and idea.
6. Evaluation (CRITICAL THINKING)	Students can review the story in its parts and its whole effect to compare it with their criteria for "true to life" drawn ~~from~~ from their knowledge of reality.

(The list summarizes the major thinking processes necessary to develop a set of judgments concerning the relationships of the story to real life. It does not summarize the skills necessary to formulate an answer in speech or in writing according to the conventions for these two forms of communication.)

Educators may also use Bloom's theories to study ways to enable their students to understand the importance of critical thinking in relationship to academic success and lifetime learning and behavior. Critical thinking, as described by Boom, involves judgments related to internal and/or external criteria for a given communication, problem, or solution. We may, in turn, further divide the judgments he cites into categories which more clearly demonstrate their practical importance to the one who judges and to society as a whole.

Subjective and Objective Judgments
in Critical Thinking

Category	Description	Examples
1. Subjective Judgments	Those in which the criteria used are meaningful to the one who judges, but may not have meaning or value to others. The value critera may be held consciously or subconsciously by the one who judges.	Is this course good for me to take? Would this FOOD portion mean that I am over-indulging?
2. Objective Judgments	Those in which the criteria used are those held by a large group of people or ought to be held because they are true to the nature or structure being judged.	Does this sonnet meet the conventions of the Petrarchan type? What is a way for determining the area of this geometric figure?

To summarize the preceding charts: 1. Critical thinking is instrinsically related to personal value systems and thus to personal ethical behaviors. These behaviors affect the fabric of personal, familial, community, and civic life; 2. Critical thinking is intrinsically related to the thinker's evaluation of the presence and nature of problems and the strategies to be used for solving problems. Problem detection and problem solving are two exceedingly important contributions to personal and social well being. In fact, it may be said that students who are taught to judge their own use of cognitive processes to determine if these are being employed to best advantage are using a kind of metacritical thinking through which they are monitoring their efforts to learn. Thus teacher analysis of critical thinking with other teachers and with their students can pin-point the modes and importance of critical thinking.

Step Two: Strategies for Teaching Critical Thinking. After a thorough investigation of the critical thinking process, educational personnel will seek to find ways to teach it in various effective ways, taking into consideration such variables as the age, social background, academic development, intellectual potential, and emotional responses of their students. Immediately, a distinction must be made between methods which demand that students use critical thinking and methods which teach students how to develop and use critical thinking. To illustrate what may seem an unnecessary distinction, we may return to the teacher who asked,"Is the short story,'Laughing Girl' true to life?" It is true that to answer this question, students must apply critical thinking, But merely providing students with the

opportunity to think in a certain way does not guarantee that they will. Students who have internalized the strategies for critical thinking will do so when prompted by the question; those who have not are apt to flounder about in a confused way. Teachers may believe that while discussing the issues in the classtime that follows the lead question , students who do not have efficient strategies for critical thinking will garner them by modeling on the behaviors of their teacher and proficient peers. Both research and experience show that teachers may well be overestimating student ability to learn in this indirect mode. For many students, particularly those of average or below average learning abilities, direct strategy teaching is necessary to bring about the learnings desired.In this paper, the direct teaching of critical thinking strategies is strongly suggested for individuals, small groups, or the entire class when such skills are diagnosed as weak or missing, especially when students have gained their tenth year.

Secondly, the group should be challenged to investigate generic and specific direct methods of teaching thinking. There are several examples of prepared instructional materials in both types which have sections related to critical thinking. Generic methods, for example, can be found in the materials prepared by: Michael Baker, Howard Black, Reuven Feuerstein, Anita Harnadek(four references), Beverly Post and Sandra Eads, the materials prepared by Think. Inc., called Strategic Reasoning.

Educators will probably wish to evaluate these materials in terms of cogent readings and experience in using the lessons. (Some readings to be used as guides for evaluating the materials

A.L. Brown, 1975; Reuven Feuerstein, 1979; Claire Conley Hill, 1980;

Donna Forrest-Pressley and T.G. Waller, 1984; Nicholas Hobbs, 1980; William Mc Cart, 1983; P. L. Peterson, 1982; C. Pratt and R. Grieve, 1984; and A.H. Schonfeld, 1979.)

Specific methods for including the direct teaching of critical thinking skills in specific subject areas are also available, such as those prepared by Barry Beyer, Joanne Carlisle, the Jamestown Comprehension Skills Series editors, J. Downing, Carol Link, Vincent Lunetta, and Shimshon Novick, and Ken Styles and Gray Cavanagh.

Some methods link the generic with the specific. See in particular the teacher manuals prepared by Curriculum Associates and an article written by Stephen Makler which describe how teachers can assist students to carry out metacognitive processes in bridging problem solving processes to specific instances. These materials are related to Feuerstein's Instrumental Enrichment materials. Teachers may also profit from an examination of the "Artifact Kit" from the multi-media kit called Strategic Reasoning, which is designed to help students apply thinking skills in real world situations.

An examination of student needs and the materials currently on the market will help teachers determine whether they will use generic, specific or combined generic-specific approaches to teaching critical thinking skills.

Conclusion

The steps in staff development suggested in this discussion would involve educational personnel themselves in metacognition. This is to say, they would have to apply various theories, reviewed at Step One, to their classrooms to analyze how best to help students to monitor their learning (Step Two.) The involvement would lead the staff to reexperience how they first learned the subject matter with which they are now so familiar. It is suggested that this interaction of educational personnel take place under the leadership of supervisory

personnel or fellow teachers who have been judged expert in staff development. A cooperative workshop mode of interchange of ideas, as suggested, can be a practical way to elicit interest and collaboration in a task which deserves to be undertaken with vigor in such a way that theory/research learned or reviewed will indeed be implemented across the curriculum by all school personnel.

Critical Thinking through the Arts and Language Arts

Baker, M.O. Syllogisms: Deductive Reasoning Activities. Pacific Grove, Ca.: Midwest Publications, 1983.

Beyer, B.K. Teaching Thinking and Social Studies Using Inquiry in the Classroom. Revised Edition. Columbus, Ohio: Charles E. Merrill, 1980.

Black,H., and S. Black. Building Thinking Skills. Pacific Grove, Ca.: Midwest Publications, 1984.

Bloom, B.S., et alia. Taxonomy of Educational Goals. Handbook 1: Cognitive Domain. New York: David Mc Kay, 1956.

Brown, A.L. The Development of Memory: Knowing, Knowing about Knowing, and Knowing How To Know. In H.W. Reese(Ed.), Advances in Child Development and Behavior(Vol.10). New York: Academic Press, 1975.

Carlisle, J. Reasoning and Reading: Level 2. Cambridge, Ma: Educators Publishing Service, Inc., 1983.

Feuerstein, R. The Dynamic Assessment of Retarded Performers: The Learning Potential Assessment Device, Theory, Instruments, and Techniques. Baltimore, Maryland: University Park Press, 1979.

Feuerstein, R. Instrumental Enrichment. Baltimore, Maryland: University Park Press, 1979.

Forrest-Pressley, D., and T.G. Waller. Cognitive and Metacognitive Aspects of Reading and Learning to Read. New York: Springer-Verlag New York, Inc., 1984.

Gagné, R., and L. Briggs. Principles of Instructional Design. Second Edition. New York: Holt Rinehart and Winston, 1979.

Gagné, R. The Conditions of Learning, Second Edition. New York: Holt Rinehart and Winston, 1970.

Gagné, R. "Learnable Aspects of Problem Solving," Educational Psychologist,15 (1980),pp. 84-92.

Guilford, J. The Nature of Human Intelligence. New York: Mc Graw Hill, 1967.

Harnadek, A. Basic Thinking Skills. Pacific Grove, Ca.: Midwest Publications, 1977.

Harnadek,A. Critical Thinking, Book I, Pacific Grove, Ca.: Midwest Publications, 1976.

Harnadek,A. Critical Thinking, Book II. Pacific Grove, Ca.: Midwest Publications, 1977.

Harnadek, A. Inductive Thinking Skills, Pacific Grove: Midwest Publications, 1979.

Hill, C.C. Problem Solving: Learning and Teaching. New York: Nichols Publishing Company, 1980.

Hobbs, N. "Feuerstein's Instrumental Enrichment: Teaching Intelligence to Adolescents," Educational Leadership, (April, 1980), pp. 566-568.

Inhelder, B., and J. Piaget. The Growth of Logical Thinking from Childhood to Adolescence. New York: Basic Books, 1958.

Jamestown Comprehension Skills Series. Providence, Rhode Island: Jamestown Publishers.

Kendall, P.C. Cognitive-behavioral Interventions with Children. In B. Lahey and A. Kazdin(Eds.), Advances in Child Clinical Psychology(vol.4). New York: Plenum Press, 1981.

Lank, C. PRIME Comprehension Lessons for Thinking Skills. Port Washington, New York: Prime Learning Inc, 1980.

Lunetta, V.N., and S. Novick. Inquiring and Problem-Solving in the Physical Sciences. Dubuque, Iowa: Kendall/Hunt, 1982.

Makler, S.J. "On Instrumental Enrichment: A Conversation with Frances Link," Educational Leadership,(April 1980), pp. 568-571 +581.

Mc Cart, W.F. The Elements of Clear Thinking: Sound Reasoning. Cambridge, Ma.: Educators Publishing Service, 1983.

A Nation at Risk: The Imperative for Educational Reform. Washington, D.C.: National Commission on Excellence in Education, 1983.

Paivio, A. Imagery and Long-Term Memory. In A. Kennedy and A. Wilkes(Eds.), Studies in Long Term Memory. New York: John Wiley and Sons, 1975.

Peterson, P.L., and S.R. Swing. Problems in Classroom Implementation of Cognitive Strategy Instruction. In M. Pressley and J.R. Leven(Eds.), Cognitive Strategy Research. New York: Springer-Verlag New York, 1983.

Peterson, P.L. "Students' Aptitudes and Their Reports of Cognitive Processes during Direct Instruction," Journal of Educational Psychology,74(1982), pp. 535-547.

Piaget, J. Piaget's Theory. In P.H. Mussen(Ed.), Carmichael's Manual of Child Psychology(Vol.1). New York: John Wiley and Sons, 1970.

Piaget, J., and B. Inhelder. The Psychology of the Child. New York: Basic Books, 1969.

Post, B., and S. Eads. Logic, Anyone? Dale Seymour Publications.

Pratt, C., and R. Grieve. Metalinguistic Awareness and Cognitive Development. In Metalinguistic Awareness in Children: Theory, Research, Implications, W.E. Tunner, C. Pratt, and M.L. Herriman(Eds.). Springer-Verlag New York, Inc., 1984.

Pressley, M., and J.L. Levin. Cognitive Strategy Research: Educational

Applications. New York: Springer Verlag New York, Inc., 1983.

Proposed Action Plan To Improve Elementary and Secondary Education Results in New York: Albany, N.Y.: State Education Department, 1983.

Schoenfeld, A.H. Can Heuristics Be Taught. In J. Lockhead and J. Clement (Eds.) Cognitive Process Instruction: Research on Teaching Thinking Skills. Philadelphia, Pa.: Franklin Institute Press, 1978.

Strategic Reasoning. Stamford, Connecticut: Think, Inc.(Innovative Sciences, Inc.), 1982. (See also the Artifact Kit.)

Styles, K., and G. Cavanagh. "Language across the Curriculum: The Art of Questioning and Responding," The English Journal, 69(February 1980), pp. 24-27.

Vygotsky, L. Thought and Language. Cambridge, Ma: MIT Press, 1962.

Vygotsky, L. Mind in Society: The Development of Higher Psychological Processes. Cambridge, Ma: Harvard University Press, 1978.